DOCUMENT RESUME

ED 173 430 TM 009 559

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TITLE Characteristics of a Locally Developed Licensure Examination.
INSTITUTION State Univ. of New York, Albany. Educational Research and Service Center.
PUB DATE 11 Apr 79
NOTE 14p.; Paper presented at the Annual Meeting of the National Council on Measurement in Education (San Francisco, California, April 11, 1979)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Certification; Differences; *Equivalency Tests; Item Analysis; Job Analysis; Occupational Tests; Real Estate; *Real Estate Occupations; Regional Characteristics; Sales Workers; Sex Differences; Standard Error of Measurement; *State Programs; Test Construction; Testing Programs; Test Items; Test Reliability; *Test Validity
IDENTIFIERS Maine; *Maine Real Estate Licensure Examination

ABSTRACT

The validity, reliability, and item characteristics of the Maine Real Estate Licensure Examination were investigated. Its validity was based on its construction; a task analysis was performed on real estate broker and salesperson jobs, items were written by trained personnel; and the test was reviewed by a panel of experts. Differences in scores were noted for respondents from different regions of the state, but no sex differences were noted. (Data on the standard error of measurement, item difficulty, and item discrimination are presented). (Md)

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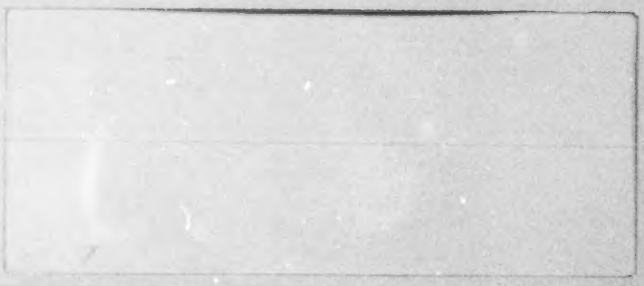

THE UNIVERSITY AT ALBANY
STATE UNIVERSITY OF NEW YORK

Characteristics of a Locally Developed Licensure Examination

by

Theodore R. Cromack

Presented at the NCME Annual Meeting in
San Francisco, Ca., April 11, 1979 as part of
Symposium: Perspectives of Licensure Examinations

CENTER FOR RESEARCH

ABSTRACT

In 1976, the Real Estate Commission for the State of Maine elected to drop a national real estate licensure examination in favor of a locally developed exam. This paper describes the validity, reliability, and item characteristics of the Maine Real Estate Licensure Examination. The Maine Center for Real Estate Education, University of Southern Maine, had developed a series of courses from task analysis of Real Estate Broker and Salesperson jobs. The validity of the licensure exam stems from the preparation of the items from these course materials by a panel of trained item writers and review of the items by a second panel of experts. Validity coeficients between courses and examinations range from r=.11 (the only non-significant relationship) to r=.74. Reliability over several administrations range from r=.65 to r=.80. This paper also presents data on the Standard Error of Measurement, item difficulty, and item discrimination. The test has also been examined for sex bias.

INTRODUCTION AND PURPOSE

State real estate commissions are charged with the regulation of real estate practice within their states. As part of this regulation responsibility, the state commissions establish procedures through which persons wishing to enter the real estate industry can learn state laws and become licensed either as a broker or a salesman. A key aspect of this system is the licensure examination which is designed to protect the industry from becoming overrun with incompetent practitioners and to protect the public from malpractice due to incompetence. This licensure examination should reflect the intricacies of state law and be defensible in regard to test-development theory.

State commissioners are often faced with the dilemma of whether to select one of the two national licensing examinations, the Educational Testing Service Real Estate Licensing Examination or the American College Testing Real Estate Examination, or whether to establish provisions to develop an examination based upon laws of their own state. Often the state commissioners are persuaded by one or two simple arguments in favor of the national examinations. These are first that the large testing companies have the expertise and resources to invest in the development of a highly efficient examination or second that the national examinations are available and the process is one which calls for immediate and continuing service.

Too often these arguments of convenience overshadow the more substantive arguments in regard to how such national examinations can overlook key state idiosyncrasies. In 1976, the State of Maine, when faced with this problem, elected to consider a locally developed, tailored examination.

A previous paper has described the advantages of a locally developed licensure examination. The next presentation, following this one, will deal with administration of a local licensure examination and procedure. This paper will attempt to demonstrate that a local licensure examination can possess strengths which make it competetive with licensure examinations developed by national testing organizations. Specifically, this paper will describe the validity, reliability, and item characteristics of the Maine Real Estate Licensure Examination, developed and administered by the Center for Real Estate Education, University of Southern Maine.

Although certain principles of real estate law, valuation, and practice are common throughout the fifty states, the commission approved courses are unique in the manner in which they address the law and practices which are peculiar to Maine. Maine real estate law differes in many ways from the law of California, New York, New Jersey, Florida, etc. Valuation of property involves considerations peculiar to Maine due to their advanced and unique land development laws. Maine real estate practices differ also from practices in other parts of the U.S.A., e.g., Maine brokers draft real estate contracts whereas in Massachusetts contracts are universally drafted by attorneys.

Different jurisdictions in the United States have enacted differing qualifications for brokers and salesmen. The educational requirements in Maine for licensing a real estate broker are relatively strict compared to the requirements of other jurisdictions. Because Maine's educational standards exceed those of other jurisdictions, and because of the peculiarities of Maine law, valuation, and sales practices, it is appropriate Maine, like California, have a licensing examination which reflects the

realities of the practices in Maine.

Having reached the above conclusion, the Maine Real estate Commission determined that the Center for Real Estate Education, University of Southern Maine, could provide an examination more responsive to the needs of the state than the examination previously used. The last examination by the national testing company was to be given during June 1977 and the Center for Real estate Education (CREE) examination was to be ready for the August testing cycle.

Using material from the Maine Real Estate law, valuation, and practice courses as the basis, a pool of items was developed. A procedure was established to train item writers, reviewers, and editors, and an initial examination prepared. Examinations for both sales and broker personnel were developed with validity, reliability, and item characteristics essentially as follows:

VALIDITY

As a minimum, a licensure examination must demonstrate content and face validity. The real estate courses offered by CREE evolved from experience in the field as real estate brokers. These courses are based on curricular materials representing task analyses of real estate brokers and salesmen. On that basis, it can be stated with confidence that the licensure examinations developed from the curricular materials have content validity. The specification of the domains was carefully and completely accomplished prior to employing the item writers. Of less importance psychometrically, but of considerable importance to the test takers and to the commission, the items provide a high degree of face validity; they appear to be measuring knowledge of real estate

principles and practices.

Content validity is one description of the extent that the test assesses the various competencies or skills needed for a broker or salesperson. Concurrent validity also refers to the ability of the test to assess the degree to which the person possesses those skills. Two kinds of evidence usually are used to demonstrate concurrent validity. First, evidence that an independent measure would demonstrate possession of such skills and second, statistical correlation with that measure. Course instructors independently grade students enrolled in the three component courses. These courses are designed to teach the requisite knowledge and skills necessary for competent real estate agents. If the licensure examination is an adequate assessment of the requisite skills of competent real estate agents, the two measures should be related. The statistical analysis yielded correlation coefficients shown below for the law, valuation, and practice components of the course and the examinations for salespersons and brokers.

TABLE 1

Validity Coefficients: Correlation Between Course and Examination

Components	Salespersons	Brokers
Law	.45	.28
Valuation	.74	.21
Practice	.36	.11

Though not high, all correlations were significant at the .01 level except the Broker examination, Practice component ($p < .09$). These items

are being analyzed and modified to attempt to improve the difficulty and discrimination.

Predictive validity is demonstration of evidence that a test taken now measures a characteristic to be demonstrated in the future. Studies are contemplated which will establish the ability of the licensure examination to assess individual's future competence as real estate brokers and salespersons.

RELIABILITY

In order to be valid, a test must consistently measure the same skill each time that it is administered. To the extent that such a characteristic exists in a test, it is said to be reliable. Two measures of reliability are important; internal consistency, and stability. Reliability is normally expressed in terms of one or more of the following statistics: standard error of measurement, Kuder-Richardson split-half coefficient (KR-20), or test-retest coefficient of stability. When feasible, it is most desirable to administer the same test, or equivalent forms of the same test, to the same individuals at two different times. The correlation between these two test administrations would yield a coefficient of stability. Evidence of this type of reliability would assure that people licensed at different times had demonstrated similar levels of competence.

When it is not feasible to administer the same test to the same individuals at two different times, the split-half measure of internal consistency is a generally accepted substitute. In effect, this measure is a correlation of two equivalent forms derived from dividing the test into two equivalent halves. Two measures of split-half reliability are shown in Table 2, below.

TABLE 2

Average Reliability Coefficients

		Components			
	Reliab.	Components			
Examination	Type	Law	Valuation	Practice	Overall
Salesperson	KR-20	.800	.747	.733	.761
	Odd-even	.801	.741	.743	.763
Broker	KR-20	.653	.727	.688	.690
	Odd-even	.670	.695	.655	.674

Standard Error of Measurement. Another estimate of the reliability of an examination is the standard error of measurement. Measurement is based upon sampling; sampling of the universe of all possible competencies or skills, sampling of all possible ways of assessing those skills, and sampling of the test taker's total abilities. Since measurement involves sampling, it is an estimating process and the score obtained contains a variety of testing errors as well as the true score. It is possible to calculate a band within which one can estimate with some degree of confidence (probability) that the true score will lie. That band is termed the standard error of measurement and its size is relative to the consistency of the test and the variation of the group of test takers. For the Maine Real Estate Examination, over two test administrations, the standard error of measurement is given in Table 3, below.

ITEM DIFFICULTIES

The difficulty of items effects not only the number of persons who "pass" the exam but also the other test characteristics, such as the

TABLE 3

Standard Error of Measurement

Examination	Law	Valuation	Practice
Salesperson	3.525	3.777	3.007
Number taking the test	264	264	264
Broker	3.001	3.167	2.920
Number taking the test	126	126	126

reliability. The average item difficulty level is the examination difficulty level, i.e., the total number of correct answers divided by all possible answers (number of test items times number of people taking the test). The difficulty level of the exam has varied somewhat over the several testing cycles, however, Table 4, below, indicates the examination difficulty level and the percentage of items within specified difficulty ranges.

TABLE 4

Difficulty Level of Exams

	Testing Cycle			
	12/77		2/78	
	Sales	Broker	Sales	Broker
Exam Difficulty	.725	.754	.702	.742
Item Difficulty (Percent)				
.90-1.00 Easy	18.0	29.4	16.0	26.7
.60-.89 Moder Easy	58.0	50.6	58.0	48.3
.40-.59 Average	19.3	15.0	19.3	17.2
.39-below Diffic	4.7	5.0	6.7	7.8

The number of persons passing the examination when an externally fixed cut-off score is established also is a measure of the difficulty of the examination. The Maine Real Estate Commission has established that the cut-off score is to be 75% for Brokers and 70% for Salespersons. These are fairly normal cut-off scores and when compared with other national examinations, yield a relative validity and difficulty measure. Table 5, below, reflects these comparisons.

TABLE 5

Comparative Difficulty Levels

Applicants passing:	Brokers	Salespersons
Maine CREE Exam	55%	46%
ETS Exam (23 states)	49%	47%
Other (National)	54%	61%

DISCRIMINATION

All examination statistics depend to some extent on other statistics. Discrimination ability of items is one of the more significant statistics. Ideally, an item should be marked correctly by those who know the material and incorrectly by those who do not know the material, yielding perfect discrimination. Due to factors such as guessing, testing errors, etc., the ideal is not attained. Further, the ideal situation would not be entirely desirable to approximate, in that it requires, among other things, that all items be of .50 difficulty. Such a difficult test would not be acceptable to the industry nor realistically, would it be possible to construct. The discrimination level within specified ranges of items in

one test administration is shown in Table 6, below. All of the previous testing cycles have yielded generally similar discrimination indices. As a note, further item analysis is contemplated using the phi coefficient as a measure of ability of an item to discriminate.

TABLE 6

Item Discrimination Indices

	Percentage of Items	
Range	Sales	Brokers
.50 and above	7.0	6.9
.25 - .49	43.0	31.7
Below .25	50.0	61.4

OTHER CHARACTERISTICS

There are a number of other characteristics which are of some importance to one developing a licensure examination. Some need virtually no comment. Administration is an arduous process but must be performed with meticulous care to avoid compromising the examination and to assure that each cycle yields comparable data and each site approximates the exact situation. Analysis of the data, from the three administration sites, indicates that there is no significant difference between scores obtained at one site from any of the others (See Table 7, below). This tends to support the reliability estimates and to confirm the content validity of the test.

Table 7, below, depicts the means obtained by testing site and by male and female applicants over several testing administrations by salesperson and broker license applicants. Statistical analysis of this data failed to identify significant difference by location by sex.

TABLE 7

Means and Standard Deviations of Sales Persons and Broker Exam Scores by Sex and Location

		Salesperson			Broker		
Test Site		Males	Females	Total	Males	Females	Total
Augusta	Mean	211.01	199.45	206.00	216.47	239.64	225.65
	S.D.	46.82	61.16	53.71	74.52	46.84	65.71
Orono	Mean	201.87	109.23	204.67	237.28	237.67	237.41
	S.D.	56.38	53.12	55.13	68.29	67.01	67.07
Portland	Mean	213.23	201.03	207.89	228.57	222.59	226.21
	S.D.	59.22	70.44	64.54	73.70	80.10	76.12

Licensure test development is a continuous process and requires meticulous attention to every item every testing cycle. Yet, given competent assistance a state can obtain a licensing examination that is responsive to local needs and appopriate to unique legal and geographic characteristics.